

Patent Application US 10/520,283 Colunga, Alfredo González (PCT ES/2003/600396)

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DESCRIPTION

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Invention title.-

~~INTERNAL DEVICE PROJECTOR OF IMAGES ON POLYHEDRONS WITH~~
5 ~~POLARIZABLE GLASS FACES AND PROJECTION PROCEDURE~~
A SYSTEM FOR PROJECTING IMAGES ON INSCRIBED POLYHEDRONS
HAVING POLARIZABLE FACES AND A PROJECTION PROCEDURE. (1)

Background to the previous technical situation.-

It is unknown so far as in the background is concerned about to the previous technical
10 situation of (2) a device with an image (3) projector of images situated within the
smaller polyhedron in the inner part of the smaller polyhedron (4) of two or more
inscribed (5) hollow polyhedrons, each one being which are contained within one
another larger one (6) but not being inscribed but not (7) encapsulated with contact
15 faces, since it is essential that there is enough distance between their faces so that an
external spectator could appreciate the three-dimensional or space effect that is
proposed.

~~and being the (8) The smaller polyhedron (9) one is contained in the bigger one (10)~~
that circumscribes it and this one successively in within (11) the next, all of them could
be either concentric, in which that (12) case they would have the same centre, or could
20 be leaned (13) on the a (14) same base or each one could have a different base at in (15)
different levels.

The polyhedrons consist essentially characterised by being fitted each one with of (16)
faces of translucent glass polarizable to transparent making it possible to project images
in a successive way on every polyhedron, only (17) the inner one or any of the outer
25 ones when the glass polarization is activated since on becoming transparent it modifies
(18) allows to modify the glass screen where the image is projected by retro projection

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with a three-dimensional effect and with a demonstrative, advertising or exhibition purpose.

Disclosure of the invention.-

The proposed invention is a retro projection procedure and an appropriate device for its working, based on the retro projection of images on concentric or successive screens which are activated successively in order to fix the projected image ~~of the projector on~~ onto every screen. (19)

~~since the~~ The screens consist of two sheets of glass or another transparent material with a liquid between both sheets which is liable to conversion to transparent or translucent states (20) by electrical polarization or depolarisation, so that the image stops being reflected (21) ~~reflecting~~ on the screen when it is transparent and on the contrary the image is reflected on the one that is in translucent state.

~~producing~~ (22) This produces the effect of moving the space plane where the image is formed, approaching or moving away off (23) from the spectator and increasing or decreasing its size.

As a result the procedure is a system of images retro projection images (24) associated to the next technical characteristics:

1º.- The source of images will be placed inside the inner polyhedron of two or more hollow ones preferably regular with the same shape although irregular or ~~with a~~ different shaped (25) polyhedrons could be used if they are provided with lenses (26), mirrors or auxiliary projectors ~~of~~ for (27) redirection of images situated ~~in these~~ on the (28) faces of each polyhedron that are is (29) not used as a screen ~~in order to~~ so that (30) the auxiliary means are made invisible to the spectator.

2º.- The polyhedrons will be disposed in a way that each one is interior or inscribed in respect ~~of~~ to (31) the next one that circumscribes it with separation between its

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faces so that each ~~all~~ (32) polyhedron faces used as screens are parallel ~~total~~ and
totally (33) or partially inscribed inside the luminic angle of projection of the images,
though in certain cases the inscribed polyhedrons could be conjugated or have their
faces in angle ~~in respect of~~ with respect to (34) those of the circumscribed
5 polyhedron in which case they will have to be associated to a complex system of
lenses, mirrors or other optical means which redirect by reflection the images to the next
polyhedron or have auxiliary independent projectors.

~~since~~ (35) The essential content of the new invention is the visual effect that is caused
to the spectator by a multiscreen device in which each screen inscribed inside another
10 bigger one or circumscribed to another smaller one could become transparent or
translucent by modifying the special location of the same image in a three-dimensional
system. As far as the present description is concerned, an inscribed polyhedron is
defined as the one, which is contained ~~in~~ within (36) another bigger one that
circumscribes it, similarly to what is said about a polygon inscribed inside a
15 circumscribed polygon.

3^a.- The polyhedron faces will be made of a special crystal, in glass, methacrylate or any
other substance, characterised by being translucent under ordinary conditions. operating
in this case to an external observer as a screen to retro project the images projected onto
it emitted from the inner part of the polyhedrons.

20 ~~or becoming~~ Alternatively it becomes (37) transparent by polarization or another
method when a light electrical current ~~pass-~~ is passed (38) through it. In such a case
the images that appear from the ~~device projector of images~~ image projector device (39)
will pass through the transparent glass freely and they will ~~project on~~ be projected onto
(40) the next polyhedron faces that are translucent. directly or by reflection of the image
25 by means of lenses or auxiliary mirrors.

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They could also be emitted onto the circumscribed polyhedron by means of independent auxiliary projectors.

~~being-~~ It is essential that ~~they-~~ images (41) are seen by an outside observer by retro projection ~~in onto (42) one or another screen being-~~ which is (43) contained ~~each one~~
5 ~~in the bigger one-~~ within another larger one (44) , and that the screen where the images are projected could be modified at the choice of an operator or the spectator himself.

4°.- With a device of dynamic effect which modifies the polyhedron's translucent or transparent state by activating or deactivating the glass polarization respectively (45)
10 like a computer or another system that regulates the electrical current of polarization of each polyhedron screen glasses, (46) it will be possible to project images from the inside of them, successively onto any of the faces of every polyhedron. depending on whether they are polarized or not. and thus each polyhedron could act in an independent way in a three-dimensional multiscreen system.

15 5°.- An auxiliary system of lenses, mirrors or auxiliary independent projectors will have to make sure that the same image emitted by a projector or from an internal bunch of projectors is appropriately directed for its projection or it is projected from an auxiliary projector on ~~each-~~ all (47) polyhedron faces.

6°.- The internal image projector in every case will remain concealed to the spectator
20 because there will always be between the spectator and the projector an activated screen with images projected on it ~~that-~~ which (48) will prevent the projector from being seen. This one could be concealed as the case may require in order to make it disappear from the inner polyhedron in which it (49) is contained to make it invisible supposing that the operator polarizes the faces of all the polyhedrons making them totally transparent.

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7°.- The lenses or auxiliary mirrors of redirection of images and as the case may be the independent auxiliary projectors, will be installed in one of the polyhedrons faces that is not used as a screen, so they stay concealed to the spectator's sight on those polyhedron faces that operate as screens.

- 5 The new invented device is a projector located in the inner polyhedron of two or more polyhedral bodies ~~inscribed each one in the~~ each one being inscribed in a (50) bigger one that contains it, concentric or conjugated (51). ~~provided with preferably consisting of~~ parallel faces which are separated ~~between them~~ from each other (52) and inscribed into the emitter angle of light projection.
- 10 The polyhedron faces are (53) made of translucent polarizable crystal, either glass, methacrylate or any other material, and provided with a system of lenses or multidirectional mirrors in order to allow the projection of the same image onto (54) all the faces of every glass polyhedron from the inside.
- ~~se that~~ (55) Glass polarization and depolarisation allow the image to be seen in any of
- 15 the glass polyhedrons by modifying its three-dimensional location in space simultaneously in all the polyhedron faces or in those selected as screens.
- ~~without~~ (56) The image projector is not accessible to the eye of the spectator since it is located inside and because an activated screen always exists between the spectator and the projector or as the case may require by concealing the projector in order to make it
- 20 disappear if all screens are polarized and made transparent. In that way a new device of projection with luminic, three-dimensional and dynamic effects, ~~able of holding~~ able to hold (57) spectator attention at a high degree with an advertising, didactic or entertainment purpose is obtained.

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Instructions as to the best way of bringing the invention into effect.-

~~It is proposed as to~~ For the best way of bringing the invention into effect the construction of two hollow concentric cubes is proposed, (58) with side faces of glass or multilaminar methacrylate ~~provided within its sheets with~~ between the sheets of
5 which there is (59) a liquid.

This liquid is (60) polarizable under the action of a low-intensity current that causes its transparency effect by polarization as the one used in any of the notorious patents or trademarks on the market in order to activate the transparency of translucent glass screens.

10 In the geometrical centre of these polyhedrons the system is provided with a projector or a bunch of image projectors which by means of a set of lenses or mirrors reflects the same image on every face of the polyhedron where it is contained.

~~being able of making it indifferently in-~~ The projector is able to project the image on
the (61) inner polyhedron if its glass faces are translucent in order to allow that the
15 ~~screen effect of the~~ image is produced in on (62) them.

Or equally (63) in the case that the faces of that inner polyhedron are polarized and made transparent, the image they (64) could be projected (65) on those of the outer polyhedron or on the following one that will have been depolarised and transformed to a translucent state with the same purpose, provided that the faces of the polyhedron
20 placed in the middle as the case may be are in a transparent state. In this way the same image could be seen ~~in on~~ (66) every face of each polyhedron, not only on the outer one but also on any of the inner ones.

~~and so~~ Thus (67) its projection could be alternated dynamically in each polyhedron with the effect of the modification of the three-dimensional location of the images
25 projected on all the faces of each ~~one polyhedron~~. (68) without the projector contained

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in the centre is being (69) visible, in order to hold intensely and ~~with in~~ (70) a new way
spectator attention with a didactic, advertising or entertainment aim.

The association of the device to a system of sensors (either of a luminic, acoustic or
thermal nature) or as the case may require to a computer, ~~allows that~~ activates (71) a
5 programmed sequence of projections by response to a stimulus such (72) as the mere
presence of an spectator or any other stimulus that activates the sensors. ~~is--activated.~~
(73)

Technical field.-

10 The described invention has an industrial application as a projector with a didactic,
advertising or entertainment aim.

Drawings.- (74)

The figure 1 is a set of two concentric cubes . The inner projector (1) is located in the
centre of the smaller polyhedron. The screen (2) that is nearer the projector permits to
15 form the emitted image if it is in a translucent state or to pass the image through it onto
the outside screen (3) if (2) is in transparent state.

The figure 2 is a set of three conjugated cubes and it requires the use of lenses or
mirrors to redirect the emitted image to the next screen.

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